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Summary:

Application The pig industry would value more disease resilient pigs but there are a lot of caveats to this aspiration related to the specific production context, side-effects and subject to acceptance of processors, retailers and consumers. Practicalities mean disease resilience is difficult to identify in practice.

Introduction Disease resistance is a valuable attribute, increasingly so as pressure to reduce antibiotic use intensifies. Genetics is one possible route to achieve this (Bishop & Woolliams 2014). This research sought to ascertain how pig industry actors viewed the contribution of more disease resilient pigs to overall herd health and productivity. It forms part of a larger project aimed at identifying genomic contributions to disease resilience.

Material and methods This qualitative research consisted of 17 individual interviews and 5 focus groups conducted between March and October 2018 in England and Scotland. A total of 67 individuals contributed, including 49 pig producers, 10 vets and 20 advisors/other. Pig producers included indoor and outdoor units, large integrators, individual producers and small pedigree breeders. Data were analysed inductively based on observation, rather than testing a theory.

Results Disease is a major concern for pig producers However, a number of caveats regarding genetic selection were expressed as indicated in Table 1.

Table 1 What needs to be taken into account when breeding more disease resilient pigs?

Factor to be taken into account	**Further explanation**
Balance between disease resilience and overall productivity and meat quality	Overall productivity is key to economic performance and the value of disease resilience will depend on context.
Balance between disease resilience and behaviour.	Tail biting and aggressiveness are proving challenging to producers. Any increase in these characteristics would not be welcome.
Difficulty of evidencing effects of improved disease resilience.	Limited anecdotal evidence of breed and strain differences in disease resilience exist but have not been corroborated. Differences in pathogenicity, housing, location and management mean differences are difficult to substantiate.
What works in the lab, may not work in the field.	The example of E. Coli resistant pigs was given, as not always performing as expected in the field.
The 'dilution' effect of changing breeding stock supplier.	Producers reported how they experiment with different sources of semen, potentially reducing the disease resilience.
Collaborative decision-making	For major decisions, producers tend to consult with veterinarian and wider supply chain
Money saving?	Could only be realised if resilience was sufficient to obviate need for vaccination and save these costs.
Mitigation or elimination?	Specific disease resistance important if unit has the disease and cannot be controlled by depopulation/repopulation.
Resilience to improve vaccine responses.	Genetics also useful to improve response to vaccination.
Too weak a response and takes too long.	Benefits would be small and allow time for pathogens to mutate to overcome resilience. Removing action of one pathogen may open the door to another.

Disease resilience was viewed as potentially effective in reducing antibiotic use, particularly in the context of 'door keeper' diseases such as Porcine Reproductive and Respiratory Syndrome (PRRS) and Enzootic Pneumonia.

Conclusion The new context of emphasising reductions in antibiotic use increases the need for new disease control methods. However, attention needs to be paid to the whole context of production, disease and disease control measures.

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References Bishop, S.C. & J.A. Woolliams, 2014. Genomics and disease resistance studies in livestock. Livestock Science. 166(Sp. Iss. 1):190-198. DOI: 10.1016/j.livsci.2014.04.034.